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WINTER DAMAGE TO PONDEROSA PINE NEAR MISSOULA, MONTANA

by

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An extensive area of damage to ponderosa pine occurred during the winter of 1972-73 in the Blackfoot Valley near Potomac, Montana. The damage consists of browning and yellowing of the pine needles. The youngest needles are affected the greatest, but older needles have also been damaged. The damage is related to the severe winter we recently experienced. The most generally accepted explanation is as follows: During a very cold period when temperatures are much below zero degrees F., entire trees become frozen, including most of the root systems. A period of warm weather, with temperatures above freezing, may follow the cold period and the needles of the trees then thaw and release water to the atmosphere. However, because the roots remain frozen, the water that the needles lose cannot be replaced and the needles die. If a wind accompanies the warm air, the damage may be intensified. Actually, the process is a form of drought, and is referred to as "winter drying" or "red belt."

In the Blackfoot Valley, it was determined by aerial survey procedures that 13,500 acres of pine were affected. About 12,340 acres were classified as light (yellowing of pine needles), 800 acres as medium (somewhat brown), and 360 acres as severe (trees mostly brown) (fig. 1). The damage is easily visible from the Blackfoot highway.

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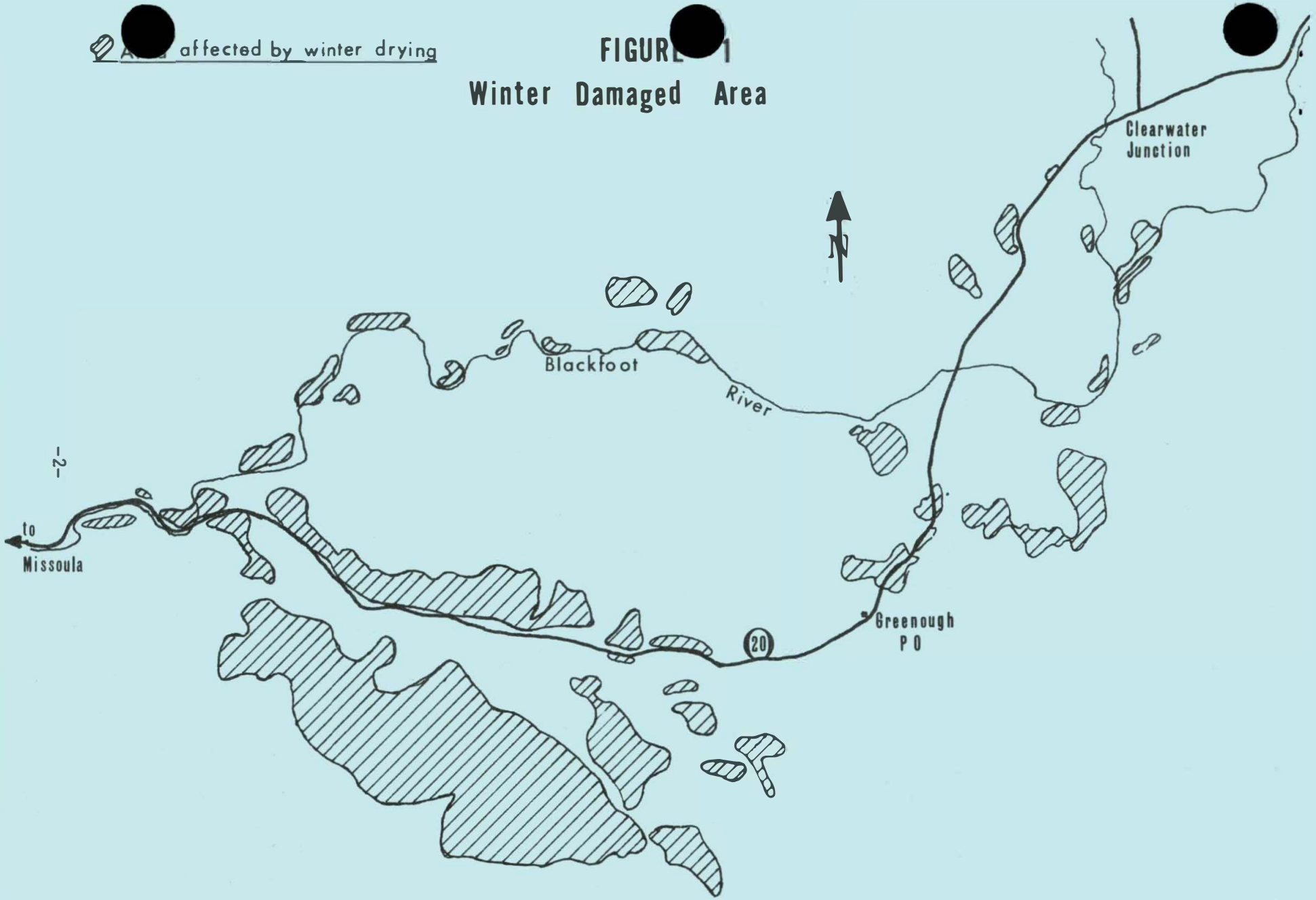
Area affected by winter drying

FIGURE 1
Winter Damaged Area



It is not expected the trees will die. The affected needles will die and fall from the trees, but because very few of the buds were damaged, new needles will be produced this spring and the trees will become green again.

It is interesting to note that although the ponderosa pine was affected by the winter drying, no symptoms were noted on Douglas-fir. Apparently firs have a much stronger resistance to this sort of damage.

Very light damage to ponderosa pine was noticed in other parts of western Montana, including the Clark Fork Valley east and west of Missoula, the Bitter Root Valley, and the Flathead Valley.